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ABSTRACT

This report provides evidence on the amount and types of cost analysis activities currently done in educational evaluation. The results of three studies undertaken to document the actual use of cost methods are discussed. The first study is a review of cost studies conducted in health evaluation. The second study examines all cost studies conducted by an educational research and development firm over a 5-year period (1977-1982). The final study is a national survey of all evaluation units in state departments of education. The results of these studies indicate that although some cost work is being done, it is simpler and more descriptive than the sophisticated, comparative approaches advocated in the literature. The results of the studies are reviewed in terms of knowledge transfer theory to explain why some of the impediments to the use of cost procedures may be arising and to suggest methods to overcome these impediments. Appendices contain materials from the national survey of state education agency evaluation units, including the survey instrument used. (DWH)

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No. 100 COST ANALYSIS IN EDUCATIONAL EVALUATION

NICK L. SMITH
JANA KAY SMITH

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Nick L. Smith, Director
Research on Evaluation Program
Northwest Regional Educational Laboratory
300 S.W. Sixth Avenue, Portland, Oregon 97204

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PREFACE

The Research on Evaluation Program is a Northwest Regional Educational Laboratory project of research, development, testing, and training designed to create new evaluation methodologies for use in education. This document is one of a series of papers and reports produced by program staff, visiting scholars, adjunct scholars, and project collaborators--all members of a cooperative network of colleagues working on the development of new methodologies.

What kinds of cost analysis studies are being done in educational evaluation? The educational literature shows very few applications of cost methods, especially the seemingly most appropriate method: cost effectiveness analysis. The health literature shows a greater use of cost methods, but for treatment or intervention research rather than for program management purposes as in education. An examination of a contracting firm's cost studies revealed the use of only the simplest cost methods and those for management purposes. A national study of SEA evaluation units showed an increasing mandate for the use of cost methods and a movement toward the use of somewhat more complicated procedures. An interpretation of these findings using knowledge transfer theory shows that practitioners have little problem with the credibility and relevance of cost methods, but major difficulties in understanding and implementing them.

Nick L. Smith, Editor
Paper and Report Series

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COST ANALYSIS IN EDUCATIONAL EVALUATION

Introduction

There are a number of arguments why evaluators should be using cost analysis methods in their work. Indeed, Wortman (1983) has gone so far as to state that ". . . in conclusion, knowledge and use of CEA/CBA [Cost Effectiveness Analysis/Cost Benefit Analysis] may be essential for the very survival of evaluation research" (p. 256). In spite of such urgent appeals, the actual use of cost analysis methods has apparently been slow to occur, especially in educational evaluation. Since we knew of no formal study of the practice of cost analysis in educational evaluation, we conducted a series of exploratory studies to identify the types of cost work being done and to study the impediments to the use of cost procedures in educational evaluation.

The purpose of this article, then, is to provide evidence on the amount and types of cost analysis activities currently done in educational evaluation. We seek to provide a "state of the practice" report on the use of cost methods in conducting program and intervention evaluations. By way of introduction, we briefly review the arguments for using cost methods in educational evaluation, we then outline four basic types of cost methods, and then we summarize the evidence of their use as recorded in the educational literature.

The main body of this article reports the results of three studies undertaken to document the actual use of cost methods. The first study consisted of a review of cost studies done

in health evaluation. Since cost methods have been used more extensively in health evaluation than educational evaluation, this review established a benchmark for comparison and helped us to identify what to look for in reviewing educational uses of cost methods. Next, in order to become familiar with the nature of cost studies as actually practiced, we examined all cost studies (15) conducted by an educational research and development firm over a five-year period (1977-1982). This was study two, which, along with the first study, prepared us to conduct the third investigation--a national survey of all evaluation units in state departments of education. This third study provided comprehensive information on current practice and future demands for cost work at the state level. The results of these three studies reveal that although some cost work is being done, it is simpler and more descriptive than the sophisticated, comparative approaches advocated in the literature.

In concluding this report, we review the results of the three studies in terms of knowledge transfer theory to explain why some of the impediments to the use of cost procedures may be arising and to suggest ways in which these impediments may be overcome. Before proceeding to these three studies, however, we provide some introductory background.

The Need for Cost Methods

Although during the 1960s and early 1970s financial resources for education expanded rapidly, a number of factors have combined to change the outlook for the 1980s. Declining tax bases, tax expenditure limitations, school bond and levy failures, continued inflationary pressures, and reductions in the level of state and federal aid have combined to place tremendous stress on educational systems. Evidence indicates that this trend will continue. Resource projections (e.g., Kirst and Garms, 1980) suggest that educational revenues will not keep pace with inflation in the 1980s.

Educational personnel struggle to cope with these budgetary problems. Budget reductions have to be made under a variety of constraints, including not violating employee contracts, not alienating political interest groups, and not lowering the quality of education provided. Further, restrictions on, or prohibitions against, deficit spending by school districts place additional pressure on school personnel to identify where budget reductions can be made with minimum detrimental impact. Even when budget reductions are not an issue, the public has increasingly demanded analyses of educational costs because the tight economic times have heightened public concern for financial accountability.

One possible way to respond to these budgetary problems is to provide information on the relationships of program costs to program outcomes. Historically, educational evaluators have studied program operations (process) or impact (outcomes) but have not related that information to program costs. They could say which program alternative was more effective, but did not know whether the increased effectiveness was related to increased cost. Budget managers historically have made recommendations based on comparative costs, but could not say whether cheaper alternatives were more or less effective. Only by incorporating both costs and outcomes within comparative studies of program alternatives can one reliably determine which alternative is most effective for a given cost, or how much it would cost to obtain a desired level of effect.

Cost and effects data must, therefore, be combined in the same analysis in order to answer crucial administrative questions such as: What is the total cost for achieving a certain level of effectiveness? What is the average cost per unit of effectiveness? What is the marginal cost for additional units of effectiveness? (Levin, 1975).

The general decline in educational resources is having a definite impact on the practice of educational evaluation, and appears to be increasing evaluators' concerns with cost analysis methods. A recent study (Gray, Caulley, and Smith, 1982) of the

impact of the national Education Consolidation and Improvement Act of 1981 on evaluation practice at the state and local level found that declining budgets were in fact having a greater influence on evaluation activities than the new federal legislation. Reductions in Chapter 1 budgets have resulted in major reductions in instructional staff and in the numbers of students served. Under the new block grant legislation (Chapter 2), most large school districts report a reduction in funds and the need to identify methods for selecting among programs competing for increasingly scarce resources. Evaluators doing contract service work with local districts and state departments also report an increase in the number of cost analysis questions from their educational clients (Gray and Smith, 1983).

The relationships between program costs and program effects has thus become increasingly important. Research on educational innovation has repeatedly shown that one prerequisite to successful change is the presence of locally felt need (Berman and McLaughlin, 1975; Cheever, Neill, and Quinn, 1976; Fullen and Pomfret, 1975). At present there appears to be some evidence of locally felt need for greater use of cost analysis techniques in educational evaluation.

Types of Cost Methods

A variety of methods could be used for dealing with cost problems in educational evaluation. Operations research techniques are available for minimizing costly program features such as student transportation and the inefficient use of school facilities, and to define program configurations that will minimize costs and maintain needed services (e.g., Page, 1979; Wholeben, 1982). Management consultation procedures are available for considering changes in programmatic functions when resources dwindle (e.g., Stanfield, 1982). Applied economists have argued, however, that the methods of greatest analytic usefulness are likely to be cost-benefit, cost-effectiveness, and cost-utility analyses which enable one to combine outcomes with costs to determine the most effective and efficient program

options. Cost-feasibility analysis can also be a useful planning method, although it does not combine outcomes with costs.

Levin (1975, 1981, 1983) provides an excellent introduction to the use of these four methods in evaluation. Cost-feasibility analysis involves estimating whether the cost of a program alternative qualifies it as a real possibility within existing financial resources. One simply determines the cost of various components of the alternative and then compares the total cost with the amount of resources available from existing sources. Cost-feasibility does not deal at all with program outcomes, and therefore provides no way of combining costs and outcomes in an overall analysis. The other three techniques do allow one to combine both costs and outcomes in a single analysis.

Cost-utility analysis involves the subjective measurement of probable outcomes, such as when an administrator or school committee estimate likely program effects. One can integrate multiple outcome measures into a single value, but because the measures and analysis are highly subjective, the results are generally not replicable. This form of analysis is useful as a planning tool for administrators, or as a device to aid in group discussion of possible program effects, but provides a weak basis for making programmatic decisions.

Cost-benefit analysis provides replicable results and enables one not only to compare alternatives for a given program, but to compare across programs which have different classes of outcomes. Because all outcomes are expressed in terms of dollar benefits, one can compare reading programs with counseling programs with athletic programs. One major problem with using cost-benefit analysis in programmatic evaluations, however, is that it is frequently very difficult to assign monetary values to program outcomes. Although cost benefit analysis has traditionally been advocated as the method of choice because it enables multiple comparisons to be made, problems in monetizing non-marketed costs have led some writers to argue that it should no longer be used in certain policy areas (Kelman, 1981). In education, since dollar values assigned to such outcomes as increased music appreciation, reading comprehension,

or self-confidence are highly questionable, cost-benefit studies frequently have little credibility with local administrators.

Cost-effectiveness analysis consists of representing program outcomes not in terms of monetary units, but in terms of other effectiveness units such as reading scores, attitude scale scores, and behavioral rates. Effectiveness units commonly consist of the standard outcome measures currently used in educational evaluation. Because one does not convert all outcomes to the same unit (dollars), one cannot use cost-effectiveness analysis to compare programs of different types (e.g., to compare reading programs to athletic programs). Cost effectiveness analysis does enable comparisons of programs with similar outcomes, however, such as which of two instructional strategies most effectively improve reading scores. Of the available techniques, therefore, cost-effectiveness analysis would seem to be the best method to use in most cost evaluations of educational programs.

If cost-effectiveness analysis is the most desirable method for conducting cost studies in educational evaluation, to what extent is it currently being used? We turned to the educational literature in an attempt to answer this question.

The Educational Literature

In order to identify current practices in the use of cost-effectiveness analysis in educational evaluation, we searched for published examples of studies employing it. Initially, a search of all ERIC entries from 1977 to 1983 was made, followed by a search of the references cited in the obtained articles.

From this search we found several articles and books that have been written primarily to urge evaluators to use cost-effectiveness analysis; some of these references also contain reviews of previous uses of cost methods.

In 1970, Alkin advocated the use of cost analysis in the evaluation of instructional programs. Levin (1975) has provided an introduction to cost analysis as well as a brief overview of

cost-effectiveness and cost-benefit methods in studies of such educational topics as manpower training programs, teacher selection, computer assisted instruction, dropouts, preschool programs, and compensatory education. Elsewhere, Levin (1981) critically examined seven illustrative studies of the use of cost-benefit and cost-effectiveness analysis in education using examples from many of the same areas. Levin (1983) and Thompson (1980) have also written texts on the use of cost-effectiveness and cost-benefit analyses in evaluation. One of the most recent additions to this literature is a volume on doing cost-effectiveness studies of educational evaluations themselves (Alkin & Solomon, 1983). Other articles (e.g., Lorenzen and Braskamp, 1978; Carr et al., 1982; Klees and Wells, 1983) have dealt with the problems and benefits of using cost-effectiveness and cost-benefit analyses in evaluation.

Unfortunately, we found few examples of cost-effectiveness analysis used in an evaluation to make comparative judgments of program or intervention alternatives. We were not searching for uses of cost-effectiveness analysis in educational finance, or in studies of general questions of educational policy. For example, we were not looking for such studies as Carnoy's (1975) investigation of the cost-effectiveness of educational television for improving education in developing nations, but we were looking for the use of cost procedures to make program decisions at the administrative or managerial level. Most studies we identified fell somewhere between national policy studies and program management applications, although usually closer to the former than the latter. For example, Levin's (1970) cost-effectiveness study of teacher selection and the Levin and Woo (1981) study of the costs of computer assisted instruction in compensatory education, we classified as more policy than programmatic in focus.

A good example of the type of cost-effectiveness application we were searching for is the Quinn et al. (1984) study of the cost-effectiveness of two alternative math programs for teaching fifth grade math. Quinn et al. used identical costs and effects measures to analyze the effectiveness of two in-place math

programs. In addition, they used a measure of social economic status to moderate for student differences. Their study is an excellent example of a full cost-effectiveness approach at the program level.

In general, however, we found very few such studies. Some articles were erroneously titled, they did not actually deal with cost-effectiveness analysis. Other articles only discussed cost-effectiveness issues and did not present results, or they presented results based only on subjective judgments without empirical evidence. Other reviewers of this literature have found similar results. In reviews of compensatory education evaluations, for example, Mullin and Summers (1983) found that only 8 of the 47 studies they examined had looked at the relationships between costs and program effects. Wargo et al. (1972) had previously found 38 studies of compensatory education that claimed to look at cost-effectiveness issues, but 32 had done so on a purely subjective basis. We found very few good examples of cost-effectiveness studies of program alternatives or interventions in the educational literature.

Perhaps we are simply looking in the wrong places, i.e., the formal journal literature on educational evaluation. It is possible that evaluators and administrators do cost-effectiveness studies, but for inhouse use only, and do not generally disseminate or publish their work. Clearly, there are innumerable examples of unpublished evaluations which study effects but pay no attention to questions of cost. One might argue that this is to be expected, given that most educational evaluators are trained as field researchers with little or no exposure to cost analysis procedures.

On the other hand, we found examples of published studies by evaluators which looked at costs only, with no attention paid to effects. For example, Smith and Hendrickson (1982) report an evaluation of the nature and costs of a district school health services program. This evaluation contained no direct measures of the effectiveness or quality of the health care provided. The authors cite this lack of effectiveness data as a major weakness in their study. Andersen (1982) describes a study of the cost of

special education in the New York City schools, again with no mention of effects data, although such data would seem essential in interpreting the cost data for policy decisions. Hartman (1981) even developed a complete model for estimating the costs of special education programs, again with no mention of effects data.

Pogrow (1983) points out that, historically, studies of school finance have focused only on educational costs, while evaluation studies have focused only on effectiveness indicators. At the policy level, economists have attempted to combine costs and effects to develop educational production functions. Pogrow argues that none of this work has produced consistent gains in educational effectiveness, and therefore that costs and the improvement of efficiency should be of prime concern.

> Specifically, cost-effectiveness analysis needs to begin to treat <u>effectiveness</u> as essentially a <u>constant</u> and examine the effects of substantially varying the cost structure of education. This suggested shift in analytical emphasis derives from the belief that improving the effectiveness of schooling is not a realistic interventionist policy goal for the eighties, and that the goal of maintaining existing levels of effectiveness at reduced cost levels (i.e., improving efficiency) should be substituted.
>
> (Pogrow, 1983, p. 75)

As we shall discuss in the next section of this article, this is, in fact, the position taken by many researchers in conducting cost evaluations of health care programs.

Having discussed the need for cost analysis procedures in educational evaluation and having identified the seemingly most appropriate method (cost-effectiveness analysis), we then proceeded to describe how this method had been used in the practice of educational evaluation as reflected in the professional literature. Unfortunately, our search of the educational literature turned up very few actual applications of this method. We, therefore, next turned our attention to a formal study of the health evaluation literature since we had observed that cost-effectiveness analysis seems to have been used

more widely there than in education. This review of the health literature provided valuable insights into our subsequent case study of cost analysis practice by a research and development firm and our national survey of cost analysis studies by state departments of education.

Studies of Practice

Study 1: Cost Analysis in Health Evaluation

In order to identify the evaluation uses of cost analysis in health areas, we first conducted a MED-LINE search of all articles between 1977-1983 and then searched the reference lists of the articles identified from the MED-LINE search. (See Smith and Smith, 1983, for a bibliography of over 350 references to the use of cost analysis in program evaluation in education and health.)

Cost-effectiveness and cost-benefit analyses began to be applied in health care evaluations in the 1960s. Since that time, the number of applications has steadily increased. Warner and Hutton (1980) report that a search of the literature for 1966-1978 identified more than 500 references on cost-benefit and cost-effectiveness analysis, growing from an average of 17 per year in the early years to an average of 73 per year in the latter four years. They indicate that the literature was growing more rapidly in medical journals than it was in non-medical journals and that proportionally more cost-effectiveness studies were published in later years than were cost-benefit studies. A similar increase in the number of cost studies of health care programs was also reported by Thompson and Fortess (1980) who reviewed the published literature from 1967 to 1978. They reported an average of seven published articles a year from 1967 to 1972 and an average of 33.5 published articles a year from 1973 to 1978. Because of the large number of cost studies conducted in the health care field, this review will focus on categories of studies and will depict trends in the use of cost methods in health evaluations.

Cost-effectiveness analyses in health care programming have used diverse measures of effectiveness. For example, mortality (Klarman, Francis & Rosenthal, 1968), morbidity (Rogers, Eaton & Bruhn, 1981), and days of survival (Skellie, Mobley & Coan, 1982) have been used as measures of program effectiveness. Other measures of effectiveness have focused on program success in optimizing health status. Here effectiveness has been indicated by scores on an activities-of-daily-living scale, tests of mental status (e.g., Doherty & Hicks, 1977; Berwick & Komaroff, 1982; Weissert, Wan, Livieratos & Katz, 1980) or behavioral measures such as weight loss (Yates, 1978).

We categorized the literature on the cost-effectiveness of health care programs into three logical groups. The first category contained articles designed to increase the understanding of cost-effectiveness methods as applied to particular health care program content areas. Second, a series of instructional articles or "how-to guides" for the conduct of cost-effectiveness analyses were identified. Finally, we found articles that discussed more abstract methodological and theoretical issues. Each of these categories of articles will be discussed below.

In terms of program content areas, much attention has been paid to the difficulty of determining the cost effectiveness of (1) health prevention, and (2) alternative home care treatment programs. Several reviews of articles describing the cost-effectiveness of these two program areas have documented both the number of analyses as well as the quality of the analyses.

Unfortunately, while many cost-effectiveness studies of prevention programs have been conducted, reviewers have been discouraged about the quality of these studies (e.g., Scheffler & Paringer, 1980; Shepard & Thompson, 1979). For example, in 1981, Rogers, Eaton, and Bruhn reviewed the published cost analyses of prevention programs from 1969 to 1979. Even though they were supportive of the utility of these analyses for program planning, they frequently pointed to a number of methodological weaknesses. Rogers et al's criticisms included the use of self

rather than random selection of program participants, the failure to use a control or comparison group, and the use of criteria that were not clearly or precisely measured.

In regard to the cost-effectiveness of alternative home care treatment programs, one major review by Hammond (1979) points to an important and frequently encountered methodological problem. Hammond noted that most articles he reviewed assumed equal effectiveness across programs, and, as a result, no effectiveness data were gathered. Rather, the cost per patient was assessed and compared across programs. Thus, one could argue that many of these so-called cost-effectiveness studies did not warrant that label, since they did not involve the study of the interactions between costs and effects. This failure to measure effectiveness is also found in other studies of the "cost-effectiveness" of health care programs (e.g., Dawson, Cohrs, Eversole, Frankenburg & Roth, 1976; Dawson, Cohrs, Eversole, Frankenburg & Roth, 1979). An additional weakness of these cost-effectiveness analyses of home care programs is pointed to by LaVor and Callender's (1976) criticism that such studies focused primarily on short-term results and were inappropriately generalized across hospital settings.

Criticisms of cost-effectiveness studies in other health care areas have been posed as well. Jacobs and Chovil (1983) reviewed cost-effectiveness analysis of corporate medical care programs. They reviewed 11 articles: 4 using cost-effectiveness methods, and 7 using cost-benefit methods. Their conclusions were discouraging. They critiqued most studies as being methodologically weak; some failed to specify alternative programs, and in many studies, costs and benefits were inappropriately valued.

Finally, cost-effectiveness analyses have also been conducted in mental health settings (e.g., Newman, Burwell & Underhill, 1978; Longabaugh, 1979; Luft & Fakhouri, 1979; Fishman, 1979; and Yates, 1979; Saxe, 1980). In recent years, the National Institute of Mental Health has supported the application of cost analysis in mental health (e.g., Newman, Barwell, and Underhill, 1978; Sorenson and Grove, 1978, and Roid, Brodsky, and Bigelow,

1980), and there has continued to be calls for the increased use of cost methods in this area (e.g., Kiesler, 1980, 1982). Many of these discussions in mental health have pointed primarily to the promise of cost-effectiveness analysis and have focused less on methodological weaknesses.

Not surprisingly, and perhaps because of the criticisms of cost-effectiveness studies of health care programs, the medical literature contains many "how-to" articles. These articles tend to be content-area specific, and usually include a review of relevant literature along with a step-by-step procedural guide for the conduct of cost-effectiveness analysis for that respective content area. Such instructional articles are found in the areas of health service delivery (Dunlap, 1975), rehabilitation (Schalock & Harper, 1982), prevention (Rogers, Eaton & Bruhn, 1981; Scheifler & Paringer, 1980; Shepard & Thompson, 1979; and general health care programs (Weinstein & Stason, 1977).

Finally, there is also a body of published health literature that focuses on methodological and theoretical issues. For example, Doherty and Crakes (1980) point to the importance of differentiating between the costs of developing a health care program versus maintaining a program. Failure to take this distinction into account can result in an overestimation of program costs. Stoddart (1982) encourages the education of clients on cost methods as a means of increasing utilization of results. He contends that educating clients will result in greater impact on the decision-making process. In contrast, there are researchers who argue that the results of cost studies should be only a part of the decision process, since the methods are difficult, unreliable (Lave & Lave, 1978) and easily biased (Jogleker, 1982).

While health applications of cost-effectiveness analyses are on the increase, the literature suggests that the quality of these applications is questionable. Further, there is now increasing question about the role of cost analysis results in the decision-making process. These writers do not suggest abandoning the methods, however, but rather indicate a necessary

period of questioning in the development of the techniques; criticisms and questions about their application suggest a positive maturation in the use of cost analysis methods in health care evaluation. That is, the initial enthusiasm is being replaced by the critical evaluation needed for refinement of the techniques.

In education, the work on educational production functions reflects an attempt to combine costs with effects at the policy level. There has been much less effort to combine the two at the managerial or administrative level, however. This has not been the case in health evaluation where a far greater number of cost-effectiveness studies of program or treatment alternatives has been performed. There have been a variety of methodological flaws in many of those studies, however, and many have not been complete cost-effectiveness studies. Some evaluators in the health profession have apparently anticipated Pogrow's (1983) analysis, as previously mentioned. For example, in a review of 14 health evaluations citing cost-effectiveness techniques, Hammond (1979) found that most studies assumed that program or treatment alternatives were equally effective, and so studied only costs in order to increase efficiency.

In summary, cost analysis, particularly cost-effectiveness analysis, is much more prevalent in health evaluation than in educational evaluation, especially at the program or intervention level. Although many of the health studies have methodological shortcomings and fall far short of following complete cost-effectiveness procedures, analysts continue to argue the need for them and researchers have managed to overcome many of the problems of implementation.

Why is the situation in educational evaluation different? There appears to be a need for cost analysis, but perhaps that need is more recent than in health, or perhaps educational researchers have lacked the training and experience to implement such studies. Our experience suggests that there is some truth in each of these explanations, but that more important reasons why cost analysis is not widely prevalent in educational evaluation has to do with the purpose for which most educational

evaluations are conducted. Many of the cost studies done in health are conducted to evaluate treatment or intervention effectiveness, they evidence a strong "treatment research" orientation. Most program evaluations in education focus more on program management concerns and less on treatment research. This difference in purpose suggests that different types of cost procedures may be needed.

In our second study, then, we sought to identify more clearly the nature and purpose of the cost studies which were actually being done in education. We examined the cost-related studies conducted by a research and development firm as part of its educational field service contract work. The results of this study suggest that, in many cases, traditional cost analysis methods are inappropriate for managerial purposes in educational program evaluation settings.

Study 2: Cost Analysis by an Educational R&D Firm

We identified and analyzed all cost studies (15) done over a five-year period, from 1977 through 1982, by a regional, private research and development agency as a part of its evaluation service work. These studies were conducted for school districts (local education agencies--LEAs) and state departments of education (state education agencies--SEAs). (See Smith, 1983a, for a more complete description of this study.)

The studies were identified by surveying agency staff concerning their own past and current cost projects and by asking about other staff in the agency who might have been involved in such work. A copy of the published report of each cost study was abstracted according to a standard case study report form and an interview with each study's principal investigator was held to check the accuracy of the abstracted description and to collect information that could not be determined from the written report. The final list of abstracted cost studies was reviewed by agency administrators to insure that all major cost studies had been identified and properly described.

For each study, the following information was collected: report title, client, year of the study, budget allocated to the study, length of time taken to complete the study, and the length of the report. The studies ranged in cost from $1,666 to $75,000 and took from 2 weeks to 36 months to complete. The reports ran from 5 to 350 pages. Four of the studies were done for LEA clients, 3 for SEA clients, and 2 studies were reported jointly to both LEA and SEA clients. The largest number of the studies, 6, were conducted specifically for use by chief state school officers.

Each cost analysis study was reviewed to identify the decision context, to describe the cost methods used, and to critique the application of cost procedures. The completed case studies were sorted into categories according to type of cost problem. Four categories were identified: (1) cost comparisons between two or more programs or entities, (2) cost description of a single program or entity, (3) budgets and planning, and (4) policy analyses.

The first category consisted of cases which simply compared costs of alternative programs or entities. In Case 1, the costs of three alternative pupil transportation systems were compared. Cases 2 and 3 compared costs of independent versus cooperative pupil transportation systems, although only costs for the cooperatives were delineated. Case 4 looked at the costs of compensatory education programs, while Case 5 looked at the cost of student activity programs.

The second category cases contained descriptions of the costs of a given program or entity. Typically, studies of this sort were conducted to depict an existing program, and they included a description of the costs of running that program. Cases 6 and 7 fell within this category. In these cases, the principal investigators had abstracted existing cost records and had tabulated the total cost of the program. Case 6 looked at the cost of educating special populations, and Case 7 looked at the cost of educating refugee students. Case 8 described a series of reports referred to as "adopter's guides." These adopter's guides were provided to school personnel when a program was

proposed. Each guide described step-by-step procedures for setting up and running a program, and often included a rudimentary description of the expected costs the program would incur. Methods of cost analysis used in these reports range from a verbal discussion of costs to a detailed tabulation of program costs.

The third category contained a variety of budget and planning studies, each of which outlined a budget plan. Case 9 provided an expenditure analysis of state educational funds, which enabled chief state school officers to better explain school expenditures to taxpayers. A follow-up study analyzed state-by-state expenditures for 6 states. Case 10 described a four-step study that suggested changes in a state school finance formula. In Case 11, detailed budget formulas were developed for use in determining equitable distribution of funds for compensatory education programs.

The fourth category consisted of policy analysis reports. The cases in this category provided theoretical discussions of policy changes affecting school functioning. Case 12 described the effects of the Elementary and Secondary Education Consolidation Act of 1981 on SEA policy. The report provided chief state school officers with alternative methods for dealing with policy changes required by the act. Cases 13 and 14 looked at implications for school funding which resulted from the passage of Proposition 13 in California and the One Percent Initiative in Idaho, respectively. The purpose of these studies was to alert school personnel to funding changes caused by the proposition and the initiative. Finally, Case 15 further discussed implications for school funding resulting from the passage of Proposition 13 and the One Percent Initiative.

Initially, an attempt was made to categorize the 15 studies according to the four common cost analysis procedures: cost-benefit, cost-effectiveness, cost-feasibility, and cost-utility. However, it became apparent that the studies fell more naturally into the four categories described above.

In some cases, alternative cost methods could have been used that would have changed the category schema used. For example, the first three cases could have been considered cost feasibility studies if an upper cost limit had been established beyond which the programs would no longer be considered feasible. The same three cases could also have been conceptualized as cost effectiveness studies. In assessing the costs of the alternative transportation systems, it had been assumed that each alternative would provide equivalent services, i.e., would equally well transport students to and from school. Given this assumption, one could argue that a cost-effectiveness ratio was reported when costs were tabulated because the denominator was equal in all cases.

Other examples of possible under-utilization of existing data included two cases which simply used archival cost records to describe program costs. The same archival records likely contained measures of program effectiveness that could have been examined in relation to the program costs. Both of these programs were widely implemented, federally funded, educational programs which had had to be continually accountable for funding purposes. In addition, the adopter's guides of Case 8 described how to measure program effects, as well as how to estimate costs, and could have readily linked the measures of effectiveness to the cost estimates, but no such cost-effectiveness linkage was found in any of the guides reviewed.

This review of 15 cost analysis investigations uncovered no cost-effectiveness studies. Rather, only simple cost descriptions or cost comparisons were conducted. Why were simple cost questions consistently posed in lieu of more elegant (e.g., effectiveness or benefit) cost questions, especially when, in many cases, existing data could have been analyzed using a more powerful cost method? To answer this question, we explored the formulation of the original cost question posed by the educator or client in these studies. The initial client question largely determined the selection of the cost analysis method.

After discussions with the principal investigators and further review of the cases, we identified four factors which contributed to the formulation of the cost question posed by the educational client.

1. The client was not familiar with cost analysis methods: In some cases, the clients seemed unaware of the full range of possible cost methods and of the related questions that could be asked. Consequently, only the lowest level, most intuitively obvious, cost questions were verbalized (e.g., "What does the program cost?" "Does Program A cost more than Program B?").

2. The client did not want to know the relationship of costs to effects. Sometimes the client wanted only cost description information and had neither the time, interest, nor resources to pursue the more complex questions.

3. The client did not consider it possible to collect the needed effects data. For example, the client thought it was not politically, economically, or logistically feasible to collect data, and the data were not already available.

4. The client did not operate in terms of comparative, cost-effects decisions. The "treatment research" logic of alternative competing programs did not match the "mid-course correction of a single program" reality of the client who was more intent on managing than researching the educational program.

The more complicated cost analyses were not conducted because the clients often did not know how to ask such cost questions, felt no need for information about the relationship of program effects and program costs, did not feel it was possible to conduct cost-effectiveness or cost-benefit studies, or just did not view his/her setting in terms of comparative, cost-effects relationships.

Next, in order to test the validity of our study results and interpretations, we held a conference of 22 evaluators and educators from R&D firms, universities, local school districts, and state departments of education. Four invited speakers (representatives of an R&D firm, a state department of education, and two school districts) critiqued the study report and discussed its conclusions. The conference focused on the issue of whether cost analysis is a useful tool in doing educational

program evaluations: is it being done? should it be done? can it be done? (See Smith 1983b for a copy of the conference proceedings.)

In general, the conclusions of the conference participants confirmed and supported our study findings: (1) Although many evaluators and educational administrators know little about formal cost analysis procedures, there is a need and readiness for evaluative cost studies. (2) A few LEAs and SEAs are doing such studies, probably more than the journal literature suggests, but the study reports are fugitive documents. (3) There are serious feasibility problems in using the four formal cost analysis methods, and adapted or simplified procedures may be needed. (For example, instructional programs are fiscally very interconnected and identifying the costs of individual programs from current school budget records is problematic—that is why so many of the 15 cases we found had to do with support services, such as transportation systems, which are budgeted separately.) (4) Cost problems usually involve much more than just analysis of costs and outcomes, such as the political realities of state appropriations and local bond elections. These are the more salient dimensions for educational administrators than cost-effect ratios. The question is oftentimes not "Which program is more cost-effective?" but "What part of the existing program can be cut without instructional and political damage?"

The results of this review of actual studies strengthened our view that cost analysis in education is valued more for its possible utility as a management tool than as a "treatment research" method as is more prevalent in health evaluations. Evidence from the second study suggested that there were probably more cost studies being done in education than we had yet uncovered because they were management-oriented and consequently not published in evaluation journals. Further, there appeared to be serious impediments to the implementation of the formal cost procedures in education.

As a result of the first two studies, therefore, we were able to conduct a systematic investigation of the use of the various forms of cost analysis in education and to identify the major

impediments to the implementation of these methods. This work is described in Study 3.

Study 3: Cost Analysis Practice and Impediments in SEAs

In 1983, a mailed questionnaire survey was conducted of all 50 state departments of education (SEAs). The purpose of the study was to record the types of cost studies SEA evaluation units were conducting, the need for future applications of cost methods, and existing impediments to the use of cost analysis methods. Although almost all SEAs have some personnel with evaluation responsibilities, we were interested in the formal cost studies conducted by those states with centralized program evaluation units. (See Appendix A for copies of the survey questionnaire and cover letters.)

Of the 50 states, only 37 had centralized evaluation units in 1983 and after an initial mailing and three follow-up mailings, 29 of them (78%) provided data for this study. Non-respondent bias checks were made using state population data, school enrollment figures, and by direct phone interview with SEA personnel. The non-responding states tend to have lower state populations and school enrollments than the responding states and are more similar to the states without evaluation units than to the responding states. The data reported here are, therefore, slightly biased in favor of the more populous states which have centralized evaluation units.

Descriptive information on these evaluation units revealed a range of from 1 to 90 inhouse evaluations conducted a year by 1 to 37 full-time professional staff. The average unit conducted about 8 evaluations a year with a professional staff of 7. These data were compared with similar information collected five years prior. In brief, there appears to have been substantial reductions over the five-year period in the size of SEA evaluation unit staffs. While the majority of studies continue to be conducted inhouse rather than contracted out to external consultants, far fewer evaluations are being performed. Although the variability across units in terms of size of staff and number

of evaluations conducted seems to be decreasing, the individual units still respond to a diverse set of multiple responsibilities, from consultation to evaluation monitoring to policy analysis. (See Smith, 1984, for more information.)

The results of the mail survey are presented below. We first discuss the current level of practice, then the anticipated need for future studies, and, finally, impediments to the use of cost methods.

First, we asked the evaluation units to report the number of cost studies they had performed in the past five years for each of seven different purposes. The list of purposes was developed based on our past studies of practice and the literature and are presented in Table 1 in increasing order of complexity along with their reported levels of use. Single cost descriptions and cost-feasibility analyses were the most commonly done studies. Although a few evaluation units had done as many as a dozen studies in the past five years, the mode for each category was clearly zero.

When asked to describe the most important cost studies they had conducted in the last five years, the respondents reported on 24 different studies. The topics of these studies were evenly divided between educational programs (math, reading, vocational education, compensatory education, community education, etc.) and support services (data processing, media, personnel, assessment, etc.). The most used methods were again single cost descriptions followed by cost feasibility analyses. In 20 of the cases, the studies resulted in important feedback or program changes. Of the 15 respondents commenting on the value of their cost studies, 13 thought they had been valuable and effective. Thus, although the incidence of cost studies has been low and the methods used have been relatively simple, the evaluation units doing these studies have generally been pleased with their efforts.

When asked if there is currently a formal expectation or requirement within the state agency that the evaluation unit do some form of cost analysis work, a surprising 48.3 percent said yes. While 11 of the units currently devote no resources to cost

Table 1

Cost Studies Conducted by SEA Evaluation Units in Past Five Years

Purpose of Study	Number of Studies	
	Mean	Range
Single Cost Description To describe the costs of a single existing program more fully	1.80	0-15
Cost-Feasibility Analysis To see if a planned program is affordable within the resources available	1.47	0-15
Cost-Utility Analysis To compare the costs of a planned program with its estimated outcomes	0.59	0-10
Single Cost-Outcome Description To compare the costs with outcomes of a single existing program	0.93	0-6
Multiple Cost Descriptions To compare the costs of 2 or more existing programs	0.14	0-1
Cost-Effectiveness Analysis To compare the costs with outcomes of 2 or more existing programs, where the outcomes are not measured in dollars but in test scores, ratings, etc.	0.35	0-5
Cost-Benefit Analysis To compare the costs with outcomes of 2 or more existing programs, where both outcomes and costs are measured in dollars	0.31	0-5

studies, the other 17 units responding devote an average of 11.5 percent of their budgets to cost work. When asked if they anticipate that over the next five years there will be a formal expectation or requirement for cost analysis work, 58.6 percent said yes and anticipated that they would have to spend an average of 17 percent of their budget on cost studies. Therefore, more SEA evaluation units expect to be required to do cost studies in the future and anticipate having to spend a greater share of their resources on cost work.

Finally, we asked the evaluation units how many of the seven types of cost studies listed earlier (see Table 1) they anticipated doing over the next five years. Figure 1 contains a comparison of current to anticipated use of the seven types of cost studies. Evaluation personnel expect to do more of all but the simplest procedure (single cost description), with the greatest increases being in the use of cost utility analysis (18.3% increase) and cost feasibility analysis (14.8% increase). Neither of these latter two approaches include the direct assessment of outcomes as with the cost-effectiveness method, for which the expected increase was more modest (about 11%). Thus, while there may be an increased demand for cost analysis and greater evaluation resources devoted to such studies, the complexity of the methods used may not increase appreciably.

Even though almost 60 percent of the SEA evaluation units anticipate doing cost studies in the future, they expect to be using the ostensible "cost method of choice," cost-effectiveness analysis, only about a quarter of the time. What impediments are there to doing cost studies in these settings and especially to the use of cost-effectiveness analysis? We next addressed those issues.

Through studying the literature (Study 1), examining examples of cost analysis service work (Study 2), and discussing the problems of using cost analysis methods with evaluators, clients, and economists, we had developed a preliminary list of impediments to the use of cost methods. Our original list contained 51 total items--21 items in the category of resource and organizational constraints and 30 items in the category of methodological and technical inadequacies. By editing similar items, regrouping others, and eliminating the more esoteric ones, we reduced our list to 10 under each of the two categories and then, after field tests, to a final 14 items. Responses to this list of impediments are summarized in Table 2.

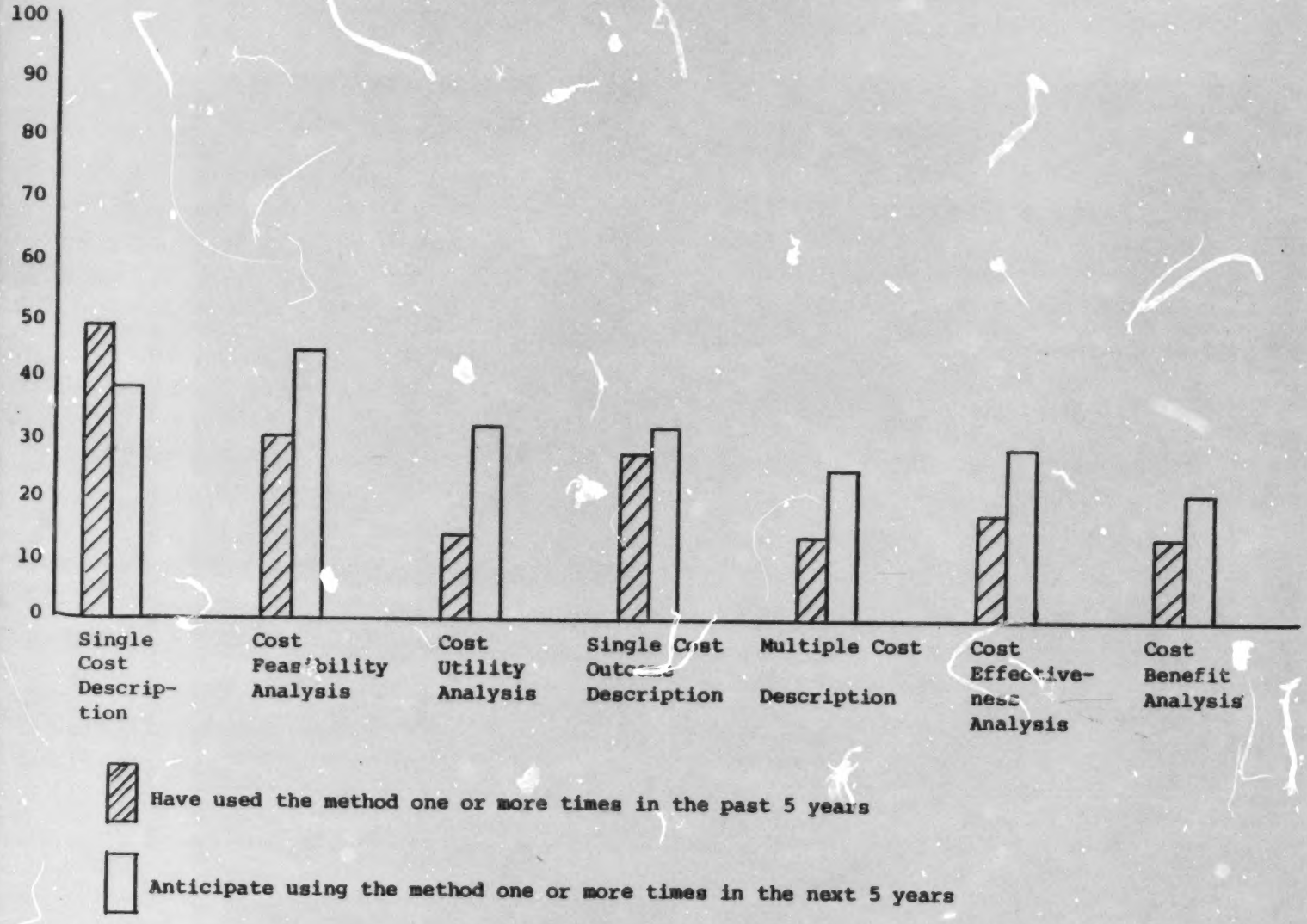

Figure 1. Percent of SEA Evaluation Units Using Cost Analysis Methods

Table 2

Impediments to the Use of Cost Analysis in SEA Evaluation Units

Item	Mean*	Don't Know
a. We are seldom asked to do cost studies	3.00	1
b. Decision makers are not often interested in actual cost information	2.28	0
c. Decision makers do not often use the results of cost studies	2.30	2
d. It takes too much time to conduct cost studies	2.37	2
e. It costs too much to conduct cost studies	2.22	2
f. Accurate cost data are usually not available	2.71	1
g. Cost study results are incomplete because it is not possible to include all important cost factors	2.69	3
h. Accurate outcome data are usually not available	2.69	0
i. It is difficult to relate cost data to educational outcomes	3.00	0
j. Cost results do not tell managers how to improve program operations	2.43	1
k. We lack staff with the technical capability to conduct cost studies	2.45	0
l. We lack available consultants or experts to help us conduct cost studies	2.31	3
m. We do not have sufficient experience in conducting cost studies	2.66	0
n. We have few guidebooks, texts, or examples to follow in conducting cost studies	2.82	1

* 4 = Strongly Agree
3 = Agree
2 = Disagree
1 = Strongly Disagree

Mean is based on N of 29 minus number of Don't Knows

The three strongest impediments to doing cost analysis were

(a) We are seldom asked to do cost studies.
(i) It is difficult to relate cost data to educational outcomes.
(n) We have few guidebooks, texts, or examples to follow in conducting cost studies.

Respondents were least able to decide (i.e., marked "Don't Know") whether it was possible to include all important cost factors in an analysis (item (g)) and whether consultants or experts were available to help with cost problems (item (l)). A reliability coefficient (standardized item Alpha) was computed for this scale using only the observations on which complete data were available (N=20) and was found to be .84. The most highly intercorrelated items were studies costing too much and taking too much time ((d) with (e) = .72); decision makers not interested and not using cost results ((b) with (c) = .70); and decision makers not interested and not asking for cost studies ((a) with (b) = .[illegible]).

Because cost-effectiveness analysis is often advocated as the best method for use in educational evaluation but is seldom employed, we asked a similar question about the impediments specific to its use. Responses to that question are summarized in Table 3. The respondents were less critical of any individual impediment than in the previous question. The greatest impediments to using cost-effectiveness analysis were

(g) Cost effectiveness analysis is difficult to do because of technical details (e.g., discount rates) and the need for sophisticated analysis procedures.

(e) Cost effectiveness analysis considers only a limited number of program outcomes and so does not represent true program effects.

(b) Cost-effectiveness analysis is often not feasible because comparative program studies are seldom possible.

A standardized item Alpha coefficient of .73 was found for this scale using only responses with complete data (N = 17). The highest intercorrelations were between cost-effectiveness

Table 3

Impediments to the Use of Cost-Effectiveness Analysis in SEA Evaluation Units

Item	Mean*	Don't Know
a. Cost-effectiveness analysis is often unnecessary because decision makers are not interested in relating program costs and effects	2.38	0
b. Cost-effectiveness analysis is often not feasible because comparative program studies are seldom possible	2.44	2
c. Cost-effectiveness analysis is too specialized a technique to be generally applicable	2.08	4
d. Cost-effectiveness analysis is so costly and complex that it is warranted only for major studies	2.35	6
e. Cost-effectiveness analysis considers only a limited number of program outcomes and so does not represent true program effects	2.45	9
f. Cost-effectiveness analysis is of limited utility since it provides no information on program procedures or local conditions	2.24	4
g. Cost-effectiveness analysis is difficult to do because of technical details (e.g., discount rates) and the need for sophisticated analysis procedures	2.56	4
h. Cost-effectiveness analysis cannot be applied to educational programs without further development of the method	2.25	5

* 4 = Strongly Agree
3 = Agree
2 = Disagree
1 = Strongly Disagree

Mean is based on N of 29 minus number of Don't Knows

analysis needing more development and its being too technical ((g) with (h) = .74); it needing more development and it considering only a limited number of outcomes ((e) with (h) = .74); and between it being too specialized and often not feasible ((b) with (c) = .71).

The previous responses suggest that there will be an increase in the use of cost methods in SEA evaluation work, especially with the simpler methods. The major impediments include not being asked to do such studies (which appears to be changing), the technical difficulty of relating costs to outcomes, and the lack of supporting guidebooks and examples. With the specific cost-effectiveness analysis technique per se, the situation is somewhat different. There is greater uniformity of response (the range of the means for cost-effectiveness analysis spans only .48 points, see Table 3, as compared with .78 points for cost analysis in general, see Table 2) and no particular impediments seem to dominate as a major problem. Although fewer evaluation units expect to be increasingly using cost-effectiveness analysis, they do not cite major impediments to its use. Why might this be so?

Notice the larger number of "Don't Know" responses for cost-effectiveness analysis as compared with the previous question (Table 3 versus Table 2). These educational evaluators apparently felt they knew less about the specific cost-effectiveness analysis technique than they did about cost analysis in general. In a separate question, we asked respondents to indicate their highest level of familiarity with cost-effectiveness analysis in terms of (a) having no knowledge of it, (b) having minimal familiarity with it, (c) having read about it or studied it, and (d) having conducted studies using it. Eighteen (62%) of the respondents reported having studied or used the techniques while the remaining 11 (38%) said they knew little or nothing about it. Perhaps the data in Table 3 reflect two different groups of evaluators: some units know little about the technique and so marked "Don't Know," while those familiar

with the technique reported that none of the possible impediments were major obstacles; that is, the means are lower in Table 3 (2.34 average) than in Table 2 (2.57 average).

Several other correlations support this possible "two group" explanation. There is a significant relationship between the total number of cost studies a unit has done in the past five years and the number they expect to do over the next five years ($R = .69$, significant at $p = .00$), and there is an extremely strong relationship between those units that have had formal expectations of cost work and those that anticipate future demands ($R = .94$, significant at $p = .001$). Further, those units most expecting to use cost-effectiveness analysis in the future are those who have done the most cost work in the past ($R = .63$, significant at $p = .001$) or who have used cost-effectiveness procedures most in the past ($R = .49$, significant at $p = .003$). Finally, we recoded the data summarized in Tables 2 and 3 to compute (1) a general cost analysis impediments index and (2) a cost-effectiveness impediments index, respectively. These indices, in general, reflect the perceived magnitude of the problems that the SEA evaluation units feel they must overcome in order to conduct cost studies. There is a moderate, positive correlation between these two indices ($R = .31$, significant at $p = .049$), suggesting that those units who feel major impediments in doing cost analysis in general also feel impediments in using the cost-effectiveness technique.

Discussion

Summary of Results

In general, we can summarize the major findings of the foregoing work as follows.

There are few cost analysis studies of educational programs published in the educational literature. There are many more cost studies published in the health literature, especially more cost effectiveness studies. The health applications tend to be more treatment research oriented than program management oriented

as in the educational studies. Health researchers have apparently solved some of the implementation problems of using cost methods, although they often merely assume outcome effects. There are reportedly many methodological shortcomings in the cost studies health researchers are conducting, but there continues to be a need for them and the literature continues to urge their use.

Our study of an R&D firm's use of cost analysis illustrates the educational use of the methods for program management more than for treatment or intervention comparisons. Only the simplest of cost methods were used, perhaps in part due to clients (a) not knowing enough to ask for more complex analyses, (b) not wanting to relate costs to outcomes, (c) not considering complex cost studies feasible, or (d) not thinking in terms of comparative trials, but more in terms of mid-course corrections of single programs. A conference with educational administrators and evaluators emphasized the need for cost methods in educational evaluation and suggested that there may be a greater number of fugitive management uses of cost analysis than we had yet uncovered. Major feasibility problems were also noted.

Our study of SEA evaluation units confirmed that some units are doing cost work and that many of them are under formal obligations to do so. They expect these obligations to increase and anticipate that they will be doing more studies in the future. These units expect to be using the slightly more complex methods in the future, but do not anticipate extensive use of the theoretical "method of choice," cost-effectiveness analysis.

The biggest impediments to doing more cost work in SEA evaluation units, aside from not being asked to, is the difficulty of relating costs to outcomes and the lack of texts and examples to guide their work. The major impediment to the use of cost-effectiveness analysis is its complexity, although many of the respondents seem to lack sufficient knowledge of this technique to comment on impediments to its use.

A Knowledge Transfer Interpretation

In closing, we would like to comment briefly on the possibility of using knowledge transfer research and principles to explain further or illuminate our findings. Of the four major knowledge transfer dimensions (organizational characteristics, innovation characteristics, individuals, and innovation process), we have only a little information on the first three. We can make only loose inferences, since our work was not designed as a knowledge transfer study, and the impediments we employed evolved from our previous studies rather than being theoretically derived. A look at knowledge transfer principles might be instructive, however, in understanding why cost methods are not more widely used in education.

There are a number of knowledge transfer models that might be used in interpreting our work. Stenzel (1982), for example, has described 8 person and 18 institutional barriers to implementing new evaluation methods in state departments of education. These barriers represent the problems in adapting new methods as seen from an insider's point of view, or what Ross (1974) calls the "buyer's" perspective as contrasted with the innovator's or "seller's" perspective. Stenzel's list as well as other collections of innovation factors, forces, conditions, and attributes (e.g., Davis and Salasin, 1979; Zaltman et al., 1977; Havelock, 1974--see Glaser et al., 1983, for a general summary of this literature) covers a wide range of dimensions on which we do not have comparable information across the sites in our study. Since most of the impediments in our study concern the nature of the innovation itself (approximately 7 of the 14 impediments for cost analysis in general - Table 2, and 7 of the 8 impediments for cost-effectiveness analysis - Table 3), we have chosen Glaser's (1973) CORRECT summary of innovation attributes for use here.

Glaser (1973) discusses seven attributes of an innovation that facilitate its transfer: credibility; observability; relevance; relative advantage; ease in understanding and installation; compatibility; and trialability, divisibility or reversibility. Each of these attributes is discussed below with

respect to the evaluation use of cost analysis methods. Only those possible impediments with a score of 2.50 or higher (indicating that the item is an actual implementation barrier) are used in the discussion which follows.

Credibility of the innovation refers to the evidence of its value from past use or from support by respected persons. There does not seem to be a problem with the credibility of these cost methods given the widespread formal requirements for their use in SEA evaluation work. Both theorists and practitioners continue to agree on the need for these methods in addition to the evident administrative support.

Observability refers to the opportunity for potential users to see demonstrations of the operation or results of the innovation. This may be a problem with the cost analysis methods in that the SEA respondents reported lacking examples to follow in conducting studies (item n., Table 2).

Relevance concerns the promise of the innovation in coping with a serious and persistent problem. As with the credibility criterion, cost methods appear to be viewed very positively in this regard--they are continually advocated in the literature as a solution to educational cost problems.

Relative advantage of the innovation refers to the extent to which the resulting improvement will be worth the investment required and will result in better outcomes than current methods. It appears that cost methods in general are seen as having relative advantage over non-cost analysis approaches. However, the anticipated increase in the use of the simpler cost methods instead of the more complex approaches (see Figure 1) suggests that such methods as cost-effectiveness and cost-benefit analysis are not seen as having a relative advantage over, say, the simpler cost feasibility and cost utility analyses.

It is with the ease of understanding and installation criterion that transfer of the cost methods seems to have the greatest difficulties. Five of the seven significant impediments in Table 2 refer to installation problems: cost data not available (item f.), outcome data not available (item h.), inability to include all important cost factors (item g.),

difficulty in relating cost to outcome data (item i.), and lack of guidebooks and examples to follow (item n.). The only significant cost-effectiveness impediment (item g., Table 3) also fell in this category--the complexity of the method.

Respondents also reported not having sufficient experience in conducting cost studies (item m., Table 2). This barrier could be seen as another installation problem or as a lack of compatibility, which refers to the match between the innovation and the potential users' previous values and procedures.

Trialability, divisibility, or reversibility refers to the ability to use the innovation without an irreversible commitment of the organization. Cost methods seem to offer little difficulty in this area.

In summary, the use of Glasser's (1973) CORRECT framework emphasizes that the major problems in the use of cost methods in SEA evaluation work have to do with the difficulty of understanding and implementing the method. The use of cost analysis as an innovative procedure scores high on other criteria such as need, credibility, and relevance. Some SEA units simply are not requested to do such studies (item a., Table 2), but those who are attempting to use cost methods are having the greatest difficulty with the actual implementation and use of the procedures. Attempts to assist in the adoption of this innovation should probably focus, therefore, on the development of guidebooks, texts, and examples for practitioners' use. The activities most likely to support the use of cost methods in educational evaluation at this time would seem to be materials development, training, and technical assistance.

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APPENDIX A

Materials from National Survey of SEA
Evaluation Units

Copy of first survey cover letter was lost, but the contents of the letter were similar to that of the second follow-up letter on page 47.

Postcard: First Follow-Up Notice

August 30, 1983

Last week we sent you a questionnaire on the use of cost analysis methods in your evaluation unit and on budgeting for evaluation studies.

If you have already sent it back, please accept our sincere thanks. Your contribution to this study is most appreciated. If you have not yet returned it, please do so today. Because the questionnaire was sent to only one person in your state department, it is essential that we have your questionnaire if we are to understand what really happens in each state education agency.

If by some chance you did not receive the questionnaire, or it got misplaced, please call us right now, on our toll-free number 1-800-547-6339, and we will get another one in the mail to you today.

Sincerely,

Nick L. Smith

Jana Kay Smith, Ph.D.
Research on Evaluation Program

Nick L. Smith, Ph.D.
Research on Evaluation Program

Second Follow-Up Notice

Northwest Regional Educational Laboratory
300 S.W. Sixth Avenue • Portland, Oregon 97204
Telephone: (503) 248-6800 TELEX: 701716 CABLE: NWREL

September 15, 1983

Dear

About three weeks ago we wrote to you asking about evaluation budgeting and the use of cost analysis methods in your state department evaluation unit. As of yet, we have not received your completed questionnaire.

We are gathering this information in order to help state department of evaluation units like yours respond to the increased need for cost analysis information within evaluation work.

We are writing to you again because of the importance of including your questionnaire in our study. Because the questionnaire was sent to only one person in your state department, it is essential that you return your completed copy if we are to understand what really happens in each state evaluation unit.

In the event that your questionnaire has been misplaced, we have enclosed another copy with a stamped, self-addressed return envelope. If you have any questions or comments, please don't hesitate to call our toll-free number 1-800-547-6339.

Your cooperation is greatly appreciated.

Cordially,

Jana Kay Smith

Jana Kay Smith, Ph.D.
Visiting Scholar
Research on Evaluation Program

Nick L Smith

Nick L. Smith, Ph.D.
Director,
Research on Evaluation Program

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Enclosures

AN EQUAL OPPORTUNITY EMPLOYER

Northwest Regional Educational Laboratory

300 S.W. Sixth Avenue • Portland, Oregon 97204 • (503) 248-6800
TELEX: 701716 CABLE: NWREL SOURCE: STL068

September 17, 1984

Dear

Several months ago you assisted us with a survey about the use of cost analysis methods by evaluation units in state departments of education. We are very grateful for the help you provided us and are writing to share with you some of the results of the survey.

Of the 50 state departments of education, only 37 had centralized evaluation units in 1983 and 29 of them (78%) responded to our questionnaire. Although a few evaluation units had done as many as a dozen cost studies in the past five years, the mode was clearly zero. Single program cost descriptions and cost-feasibility analyses were the most commonly done studies. Although the number of studies done was low and the methods used were relatively simple, the units doing cost studies reported being pleased with the impact of their efforts.

Surprisingly, 48 percent of the units said there was currently a formal expectation or requirement that they do some form of cost analysis work and they estimated devoting an average of 11.5 percent of their budgets to cost work. Fifty-nine percent of the units anticipated having a formal requirement to do cost studies in the next five years and expected to spend an average of 17 percent of their budgets for that purpose.

When we asked why the units were not currently doing more cost studies, some respondents said that they were simply not being asked to do them. Most respondents, however, said that it was difficult to relate cost data to educational outcomes and that they had few examples, texts, or guidebooks to follow in conducting cost studies.

The evaluation units did expect to be using a wider range of cost methods in the future, especially cost-utility analysis and cost-feasibility analysis. Few of them expected to be using the more complicated methods which include actual comparisons of costs with outcomes, such as cost-effectiveness and cost-benefit analysis.

When we asked why they didn't use cost-effectiveness analysis more (the theoretically best method for this work), they reported either not knowing much about it or thought it was simply too complicated.

AN EQUAL OPPORTUNITY EMPLOYER

We are continuing our work on cost analysis methods in 1985, including developing more streamlined methods for evaluation use and producing guidebooks and examples to help evaluators get started with the methods. We welcome your suggestions, questions, and requests for materials.

Enclosed is a copy of Henry Levin's new book Cost-Effectiveness: A Primer which was developed in part with our support. We would also be happy to send you a copy of the full survey report "Cost Analysis in Educational Evaluation" upon request. Thank you again for participating in our survey study.

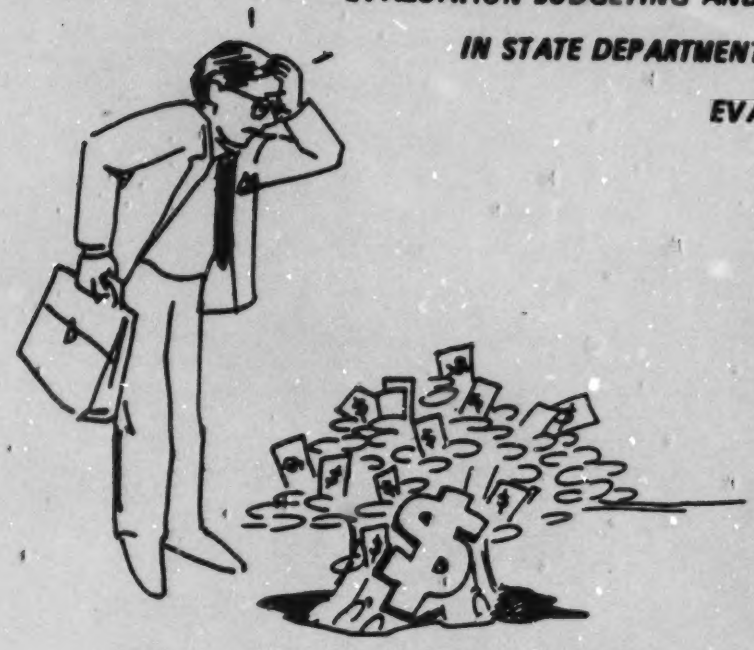
Cordially,

Nick L. Smith Janakay Smith

Nick L. Smith, Ph.D. Jana Kay Smith, Ph.D.
Research on Evaluation Program

NLS:eg
Enclosure

EVALUATION BUDGETING AND COST ANALYSIS IN STATE DEPARTMENT OF EDUCATION EVALUATION UNITS



This is a survey of state education agency evaluation units to (1) look at the ways evaluation studies are budgeted, (2) find out how often cost analysis studies are conducted, and (3) identify possible problems in doing cost studies.

Please answer all of the questions. If you wish to comment on any questions or qualify your answers, please use the margins or a separate sheet of paper.

Thank you for your assistance.

Conducted by:

Research on Evaluation Program
Northwest Regional Educational Laboratory
300 S. W. Sixth Avenue
Portland, Oregon 97204

QUESTIONS ON EVALUATION BUDGETING

In order to assist evaluators in managing resources, we are studying how funds are typically allocated across cost categories within an evaluation study. We would like to know, therefore, how your unit would typically budget evaluation funds for two types of common evaluation studies.

THE SITUATION: Questions 1 and 2 refer to the following hypothetical situation.

> Assume that your evaluation unit has been asked to evaluate a minority education project in a nearby metropolitan city in your state. The project is designed to improve student self image and school performance, and to increase the community acceptance of minority students. In this first year of the project, your unit is to conduct a formative evaluation to provide feedback for program improvement to the local school district. You have $10,000 total to spend on all expenses of the evaluation study. We would like to know what major evaluation activities you would include in your study (Question 1) and how you would allocate the evaluation resources (Question 2).

Q-1 EVALUATION DESIGN: CHECK ALL ACTIVITIES THAT WOULD BE A MAJOR PART OF YOUR FORMATIVE EVALUATION STUDY

___ a. Development of an evaluation plan

___ b. Use of an evaluation advisory panel

___ c. Development and piloting of instruments

___ d. Use of control or comparison groups

___ e. Collection of pre-test data

___ f. Review and analysis of documents

___ g. Collection of on-site observation data

___ h. Collection of personal interview data

___ i. Use of phone interviews

___ j. Collection of mail survey data

___ k. Use of community hearings

___ l. Use of expert reviews

___ m. Collection of post-test data

___ n. Development of case study reports

___ o. Statistical analysis of data

___ p. Verbal presentation of study findings

___ q. Development of narrative reports

___ r. Provision of consultation and followup assistance to project staff

3

Q-2 EVALUATION BUDGETING: INDICATE THE AMOUNT OF MONEY YOU WOULD ALLOCATE TO EACH CATEGORY FOR THIS FORMATIVE EVALUATION (remember the total amount you have to allocate is $10,000)

_____ a. Personnel costs (professional staff and support staff salaries and benefits)

_____ b. Consultant costs (consultant salaries and benefits)

_____ c. Staff travel

_____ d. Consultant travel

_____ e. Communication (telephone, postage, shipping)

_____ f. Facilities(facilities and utilities)

_____ g. Duplication (printing and duplication)

_____ h. Data processing

_____ i. Supplies (materials, supplies, equipment)

_____ j. Other services (e.g., subcontracts, conferences; please specify)

_____

_____

$10,000 TOTAL COSTS

THE SITUATION: Questions 3 and 4 refer to the following hypothetical situation.

> Assume now that it is the third year of this demonstration minority education project and that your unit has been asked to conduct a summative evaluation to determine whether the project should be adopted throughout the state. You again have $10,000 total to spend on all expenses of the evaluation study. Please indicate what activities you would include in the study (Question 3) and how you would allocate your resources (Question 4).

Q-3 EVALUATION DESIGN: CHECK ALL ELEMENTS THAT WOULD BE A MAJOR PART OF YOUR SUMMATIVE EVALUATION STUDY

___ a. Development of an evaluation plan

___ b. Use of an evaluation advisory panel

___ c. Development and piloting of instruments

___ d. Use of control or comparison groups

___ e. Collection of pre-test data

___ f. Review and analysis of documents

___ g. Collection of on-site observation data

___ h. Collection of personal interview data

___ i. Use of phone interviews

___ j. Collection of mail survey data

___ k. Use of community hearings

___ l. Use of expert reviews

___ m. Collection of post-test data

___ n. Development of case study reports

___ o. Statistical analysis of data

___ p. Verbal presentation of study findings

___ q. Development of narrative reports

___ r. Provision of consultation and followup assistance to project staff

Q-4 EVALUATION BUDGETING: INDICATE THE AMOUNT OF MONEY YOU WOULD ALLOCATE TO EACH CATEGORY FOR THIS SUMMATIVE EVALUATION (remember the total amount you have to allocate is $10,000)

_____ a. Personnel costs (professional staff and support staff salaries and benefits)

_____ b. Consultant costs (consultant salaries and benefits)

_____ c. Staff travel

_____ d. Consultant travel

_____ e. Communication (telephone, postage, shipping)

_____ f. Facilities(facilities and utilities)

_____ g. Duplication (printing and duplication)

_____ h. Data processing

_____ i. Supplies (materials, supplies, equipment)

_____ j. Other services (e.g., subcontracts, conferences; please specify)

_____

$10,000 TOTAL COSTS

Q-5 Finally, with respect to both of these situations, what indirect or overhead rate would your agency normally add to the costs of these evaluations? For example, a 20% overhead rate would bring the total cost of one of these studies to $12,000. (20% x $10,000 = $2,000; $10,000 + $2,000 = $12,000)

WHAT OVERHEAD RATE WOULD YOUR AGENCY USE FOR THESE STUDIES? _____PERCENT

Thank you for answering these questions on evaluation budgeting. The next section of the questionnaire pertains to using cost analysis methods in evaluating educational programs.

QUESTIONS ON COST ANALYSIS STUDIES AND METHODS

Some state department of education evaluation units receive requests for cost information. In order to assist them, we need a more complete understanding of what kinds of cost work are currently being conducted, what work is likely to be requested, and anticipated problems in doing cost work. We are especially interested in formal studies involving the computation of program costs.

Q-6 First we need to know what kind of cost studies, if any, are being done. Listed below are several purposes that cost analysis studies can serve. Please write the number of cost studies conducted for each purpose by your evaluation unit in the last five (5) years and the approximate number anticipated over the next five (5) years.

PURPOSE OF COST STUDY:	NUMBER OF COST STUDIES DONE IN PAST 5 YEARS	NUMBER OF COST STUDIES ANTICIPATED OVER THE NEXT 5 YEARS
a. To see if a planned program is affordable within the resources available (cost-feasibility analysis)	_____	_____
b. To compare the costs of a planned program with its estimated outcomes (cost-utility analysis)	_____	_____
c. To describe the costs of a single existing program more fully (single cost description)	_____	_____
d. To compare the costs with outcomes of a single existing program (single cost-outcome description)	_____	_____
e. To compare the costs of 2 or more existing programs (multiple cost descriptions)	_____	_____
f. To compare the costs with outcomes of 2 or more existing programs, where both outcomes and costs are measured in dollars (cost-benefit analysis)	_____	_____
g. To compare the costs with outcomes of 2 or more existing programs, where the outcomes are not measured in dollars but in test scores, ratings, etc. (cost-effectiveness analysis)	_____	_____
h. Other (please specify) _____		
_____		
_____		
_____	_____	_____

Q-7 Is there currently a formal expectation or requirement within the agency that your unit do some form of cost analysis work?

_____ NO _____ YES PLEASE EXPLAIN:_____

_____

_____

_____

_____

_____

Approximately what percent of your total evaluation unit resources are currently devoted to performing some form of cost analysis work?

_____ PERCENT

Q-8 Do you anticipate that over the next 5 years there will be a formal expectation or requirement that your unit do some form of cost analysis work?

_____ NO _____ YES PLEASE EXPLAIN:_____

_____

_____

_____

_____

_____

Approximately what percent of your total evaluation unit resources do you believe will be devoted to performing some form of cost analysis work over the next 5 years?

_____ PERCENT

If you have conducted no cost studies in the last 5 years, skip to QUESTION 10.

Q-9 Please briefly describe the two most important cost studies you conducted in the last 5 years. Please indicate:

Cost Study 1

a. The topic (e.g., bus leasing, a reading program):

b. Type of cost study (see Question 6, a-h for typology):

c. Basic procedures:

d. The decision or actions resulting from the study:

e. Your assessment of the value of this particular study:

Cost Study 2

a. The topic (e.g., bus leasing, a reading program):

b. Type of cost study (see Question 6, a-h for typology):

c. Basic procedures:

d. The decision or actions resulting from the study:

e. Your assessment of the value of this particular study.

Q-10 We recognize that some evaluation units may have had little or no experience conducting cost studies. Even if this is the case with your unit, your responses to this survey are important to us. We are interested in the problems evaluation units are having in conducting cost studies, and especially why they do not conduct more of these studies.

Some units report a number of impediments that prevent them from doing cost studies. Please indicate the degree to which the following factors restrain the number of cost studies done by your evaluation unit.

THESE FACTORS IMPEDE OUR DOING COST STUDIES: (circle degree of agreement or disagreement for each factor)	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	DON'T KNOW
a. We are seldom asked to do cost studies	SA	A	D	SD	DK
b. Decision makers are not often interested in actual cost information	SA	A	D	SD	DK
c. Decision makers do not often use the results of cost studies	SA	A	D	SD	DK
d. It takes too much time to conduct cost studies	SA	A	D	SD	DK
e. It costs too much to conduct cost studies	SA	A	D	SD	DK
f. Accurate cost data are usually not available	SA	A	D	SD	DK
g. Cost study results are incomplete because it is not possible to include all important cost factors	SA	A	D	SD	DK
h. Accurate outcome data are usually not available	SA	A	D	SD	DK
i. It is difficult to relate cost data to educational outcomes	SA	A	D	SD	DK
j. Cost results do not tell managers how to improve program operations	SA	A	D	SD	DK
k. We lack staff with the technical capability to conduct cost studies	SA	A	D	SD	DK
l. We lack available consultants or experts to help us conduct cost studies	SA	A	D	SD	DK
m. We do not have sufficient experience in conducting cost studies	SA	A	D	SD	DK
n. We have few guidebooks, texts, or examples to follow in conducting cost studies	SA	A	D	SD	DK
o. Other (please specify)_____	SA	A	D	SD	DK

_____

Q-11 One type of cost analysis procedure, cost-effectiveness analysis, compares all the costs (e.g., personnel, facilities, equipment) of two or more similar programs to measures of program outcomes (e.g., test scores, behavioral changes).

CHECK YOUR HIGHEST LEVEL OF FAMILIARITY WITH COST-EFFECTIVENESS ANALYSIS (check one):

____ Have conducted studies using it
____ Have studied or read about it
____ Have minimal familiarity with it
____ Have no knowledge of it

Q-12 Cost-effectiveness analysis is one of the most suitable ways of comparing the costs and outcomes of one education program with another, but so far the technique has been used little in educational evaluation. To understand why this technique is not widely used in educational evaluation, we would like your opinions about the following items.

DO YOU THINK THAT:

(circle degree of agreement or disagreement for each factor)

	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	DON'T KNOW
a. Cost-effectiveness analysis is often unnecessary because decision makers are not interested in relating program costs and effects	SA	A	D	SD	DK
b. Cost-effectiveness analysis is often not feasible because comparative program studies are seldom possible.	SA	A	D	SD	DK
c. Cost-effectiveness analysis is too specialized a technique to be generally applicable	SA	A	D	SD	DK
d. Cost-effectiveness analysis is so costly and complex that it is warranted only for major studies	SA	A	D	SD	DK
e. Cost-effectiveness analysis considers only a limited number of program outcomes and so does not represent true program effects	SA	A	D	SD	DK
f. Cost-effectiveness analysis is of limited utility since it provides no information on program procedures or local conditions	SA	A	D	SD	DK
g. Cost-effectiveness analysis is difficult to do because of technical details (e.g., discount rates) and the need for sophisticated analysis procedures	SA	A	D	SD	DK
h. Cost-effectiveness analysis cannot be applied to educational programs without further development of the method	SA	A	D	SD	DK

Thank you for answering these questions on cost analysis! The next section of the survey pertains to the operation of your evaluation unit.

QUESTIONS ON YOUR EVALUATION UNIT

In order to understand the differences among state department evaluation units with respect to evaluation budgeting and cost analysis, we need to know a few basic characteristics of your operation.

Q-13 What was the total annual budget for your evaluation unit for the 1982-1983 school year?

TOTAL BUDGET: $_____

Q-14 How many full-time equivalent (FTE) professional staff worked in your unit during the 1982-1983 school year?

TOTAL STAFF: _____ FTE

Q-15 Some state department evaluation units conduct most of their evaluation studies by using inhouse staff, other units by subcontracting to external evaluators. During the 1982-1983 school year, how many of your evaluation studies were done by your staff, how many through subcontracts?

NUMBER INHOUSE EVALUATIONS: _____

NUMBER EXTERNAL EVALUATIONS: _____

Q-16 Many evaluation units have responsibilities other than conducting evaluation studies. Please indicate below the major responsibilities of your evaluation unit during 1982-1983.

CHECK ALL MAJOR RESPONSIBILITIES:

____ a. Evaluation studies
____ b. Evaluation monitoring
____ c. Testing programs
____ d. Planning
____ e. Research studies
____ f. Consultation/technical assistance
____ g. Policy analysis
____ h. Needs assessment
____ i. Information provision
____ j. Other (please specify) _____

_____

_____

Finally, we would like to ask a few questions so that we can better support state department evaluation units in 1984 and 1985 in improving their evaluation efforts.

Q-17 What parts of your total evaluation process most need improvement over the next 3 to 5 years if you are to provide the best possible service?

CHECK ALL MAJOR AREAS NEEDING IMPROVEMENT:

____ a. Problem Formation
____ b. Study Design
____ c. Data Collection
____ d. Data Base Maintenance
____ e. Data Analysis
____ f. Information Reporting
____ g. Evaluation Management
____ h. Other (please specify) _____

_____

_____

Q-18 What specific problems do you anticipate facing within the next 3 to 5 years that will affect the quality of the services you provide (e.g., limited funds; untrained or fewer staff; increased demands for evaluation services; lack of suitable evaluation methods)?

1.

2.

3.

4.

Q-19 If state or federal funds were available for research and development work to improve state level evaluation, what topics or activities should receive most attention?

1.

2.

3.

4.

Some state departments are struggling with traditional testing problems, while others are facing new difficulties brought about by the widespread use of microcomputers.

Q-20 How do you think statewide assessment programs can be improved so that test results are more useful to local districts?

Q-21 Is the increased availability of microcomputers likely to significantly affect the nature of your evaluation work?

___ NO ___ YES PLEASE EXPLAIN:_____

_____

_____

_____

Thank you for your interest and support in providing us with this information. We very much appreciate your cooperation. If there is anything else you would like to share with us about cost studies, evaluation budgeting, or ways we could further assist in the improvement of evaluation practice, please use this page to tell us.

Please use the enclosed envelope to return this completed questionnaire to Dr. Nick L. Smith, Research on Evaluation Program, Northwest Regional Educational Laboratory, 300 S. W. Sixth Avenue, Portland, OR 97204. For inquiries, call 1-800-547-6339.

ID #_____

Northwest Regional Educational Laboratory
300 S.W. Sixth Avenue
Portland, Oregon 97204
Telephone (503) 248-6800